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CENTRAL INTELLIGENCE AGENCY
INFORMATION FROM
FOREIGN DOCUMENTS OR RADIO BROADCASTS

REPORT [redacted]

CD NO. --

COUNTRY USSR

SUBJECT Scientific - Chemistry, acetylene chemistry

DATE OF INFORMATION 1954

HOW PUBLISHED Bimonthly periodical

DATE DIST. 2 Sept 1954

WHERE PUBLISHED Moscow

NO. OF PAGES 2

DATE PUBLISHED Feb 1954

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LANGUAGE Russian

SUPPLEMENT TO REPORT NO.

THIS IS UNEVALUATED INFORMATION

SOURCE Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, No 1, pp 185, 186.

I. N. NAZAROV'S WORK IN ACETYLENE CHEMISTRY

I. N. Nazarov was elected Active Member of the Academy of Sciences USSR, in the speciality of organic chemistry, at a general meeting of the academy held 23 October 1953. Nazarov's activity during 1933-1953 proceeded along the following lines:

One of the major subdivisions of his investigations dealt with free radicals of the fatty and fatty-aromatic series, i.e., the so-called metal-ketyls obtained by the action of sodium on branched ketones of the hexamethylacetone types. As a result of this work, which disclosed that stable radicals with trivalent carbon are capable of existence, a number of investigations were carried out on the isomerization under fission of olefinic hydrocarbons containing tertiary radicals, a process which takes place at relatively low temperatures.

A second, extensive group of investigations carried out by Nazarov dealt with the chemistry of acetylene and of vinylacetylene. Of particular importance among these investigations is the work on vinylethinylcarbinols, a class of substances the simplest representative of which is being produced industrially according to a method proposed by Nazarov and is used for the manufacture of new adhesives (Nazarov's "carbinol glue"). The vinylethinylcarbinols have served as the basis for the creation of a new branch of the chemistry of unsaturated compounds. As the most important examples of the use of vinylacetylene in the synthesis of new compounds one may mention the synthesis of vinylisocoumarins the synthesis of divinylketones, and the cyclization of dienones into substituted cyclopentenones. The last reaction proved to be particularly prolific: it opened the possibility of obtaining by a simple method the most diverse monocyclic and polycyclic compounds containing a five-membered ring.

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A third group of Nazarov's investigations was devoted to the synthesis, on the basis of divinylketones and vinylallylketones, of heterocyclic compounds containing piperidine, pyrone, thiopyran, and furane nuclei. Some of these compounds were found to be physiologically active, and further work in this field led to the development of the new analgesic promedol, which has a stronger action than morphine but is free of the latter drug's toxic properties. At present promedol is being manufactured industrially for medical use.

The fourth group of investigations carried out by Nazarov deals with the synthesis of polycyclic compounds on the basis of vinylacetylene. This includes compounds which are related to steroids. In the course of this work, the complete synthesis of a number of compounds was accomplished of the cis-cis-series with the skeletons of androstane, homoandrostane, estrane, and of their heterocyclic analogs. The work in question opened the way to the solution of one of the fundamental problems of contemporary organic chemistry, namely that of the chemistry of steroid compounds. This subdivision of Nazarov's work required the completion of a number of theoretical investigations pertaining to the mechanism of the diene synthesis and to its stereochemistry.

Because of its purposeful character and its scope, Nazarov's work represents an important contribution to modern organic chemistry. Nazarov must be considered one of the most outstanding contemporary organic chemists.

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